UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,186	06/21/2001	David F. Craddock	AUS920010472US1	6475

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EXAMINER
SHINGLES, KRISTIE D

ART UNIT	PAPER NUMBER
2141	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/886,186	CRADDOCK ET AL.
	Examiner	Art Unit
	Kristie Shingles	2141

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 March 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-42</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-42</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 March 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant has amended claims 1, 2, 9, 10, 17, 18, 25, 27, 31, 33, 37 and 39.
Claims 1-42 are pending.

Drawings & Specification

1.   The proposed drawing and specification corrections filed on 3/3/2005 have been

accepted by the Examiner. The corrections to the drawings will not be held in abeyance.

Response to Arguments

2.   Applicant's arguments with respect to claims 1-42 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims **1-25, 27-31, 33-37 and 39-42** are rejected under 35 U.S.C. 103(a) as

being unpatentable over *Acharya* (USPN 6,459,698) in view of *Pettey* (US Publication

2004/0128398).

a.   **Per claim 25,** *Acharya* teaches a method of routing data between a system

area network and an external network, comprising:

- receiving, within an Internet Protocol (IP) router, data from a host channel
  adapter that utilizes an Infiniband (IB) protocol as its network protocol for
  data communications, the IP router utilizing IP as its networking protocol
  for data communications, the IP router being connected directly to the host
  channel adapter (col.2 lines 18-46, col.3 line 45-col.4 line 22 and col.7
  line 52-col.8 line 21);

- parsing a routing header of the data (col.2 lines 24-44 and col.7 line 49-
  col.18 line 10);

- identifying an output port of the router based on the parsing of the routing
  header (col.2 lines 36-46, and col.7 line 52-col.8 line 21); and

- sending the data out of the router via the identified output port (col.2 lines
  36-46, col.6 lines 43-56 and col.7 line 63-col.8 line 21).

Although *Acharya* teaches outputting data via identified virtual lanes

based on information acquired from parsing the router header (col.7 line 63-col.8 line

21), *Acharya* fails to explicitly teach outputting the data via an identified output port.

However, *Pettey* teaches the selection of an output port based on the parsed header data

(paragraphs 0052-0059, 0061, 0068, 0088, 0102-0104, 0112-0116 and 0136).

It would have been obvious to one of ordinary skill in the art at the time

the invention was made to combine the teachings of *Acharya* and *Pettey* for the purpose

of identifying an output port from the parsed data in the routing header; because the

routing header is known for specifying destination and port information in order to

efficiently accomplish routing the communicated data from the source to the appropriate

destination and interface.

b.   **Per claim 1,** *Acharya* teaches a method of transmitting data packets from

a system area network device to an external network device, comprising:

- passing data generated by a host process to a host channel adapter that utilizes an Infiniband (IB) protocol as its networking protocol for data communications (col.2 lines 18-46 and col.7 line 52-col.8 line 7); and

- passing the data from the host channel adapter directly to an Internet Protocol (IP) router that uses IP as its networking protocol for data communications, the router being connected directly to the host channel adapter, the router also being coupled to an external network that utilizes IP as its networking protocol for data communications (col.2 lines 28-41, col.3 line 45-col.4 line 22 and col.7 line 52-col.8 line 21).

c.   **Claims 1, 9, 17, 31 and 37** contain limitations that are substantially

equivalent to claim 25 and are therefore rejected under the same basis.

d.   **Per claim 2,** *Acharya* and *Pettey* teach the method of claim 1, *Pettey*

further teaches the method, wherein passing the data generated by a host process to a host

channel adapter included in a host includes invoking an Internet Protocol (IP) over

InfiniBand (IB) device driver in the host (paragraphs 0019, 0081-0088, 0101-0106 and

0126).

e.   **Claims 10 and 18** are substantially equivalent to claim 2 and are therefore

rejected under the same basis.

f.   **Per claim 3,** *Pettey* teaches the method of claim 2, wherein passing data

generated by a host process to a host channel adapter includes creating an IP over IB

Queue Pair in the host channel adapter for use with the IP over IB device driver

(paragraphs 0022-0023, 0085-0092, 0097-0099, 0102-0112, 0121 and 0134-0142;

Acharya: col.3 line 66-col.4 line 55 and col.6 lines 5-23).

g.   **Claims 11 and 19** are substantially equivalent to claim 3 and are therefore rejected under the same basis.

h.   **Per claim 4,** *Pettey* teaches the method of claim 2, wherein the step of passing data generated by a host process to a host channel adapter is performed in response to an I/O Transmit transaction being received by the IP over IB device driver (paragraphs 0016-0019, 0022-0026, 0041, 0058-0059, 0075-0085, 0098, 0110-0116 and 0130-0134; *Acharya:* col.6 lines 43-56 and col.7 lines 6-28).

i.   **Claims 12 and 20** are substantially equivalent to claim 4 and are therefore rejected under the same basis.

j.   **Per claim 5,** *Pettey* teaches the method of claim 4, wherein the I/O Transmit transaction originates from one of a user level program and a kernel level program (paragraphs 0022-0026 and 0048-0059).

k.   **Claims 13 and 21** are substantially equivalent to claim 5 and are therefore rejected under the same basis.

l.   **Per claim 6,** *Pettey* teaches the method of claim 4, wherein the I/O Transmit transaction includes one or more pointers to one or more memory regions which contain the data, and wherein the I/O Transmit transaction further includes one of a destination address and destination address handle (paragraphs 0016-0025, 0051-0054, 0058-0061, 0071, 0081-0084, 0088-0092, 0102, 0124 and 0130-0134; *Acharya:* col.4 lines 4-22, col.6 lines 5-56 and col.7 lines 6-44).

m.   **Claims 14 and 22** are substantially equivalent to claim 6 and are therefore rejected under the same basis.

n.   **Per claim 7,** *Acharya* and *Pettey* teach the method of claim 1, *Pettey*

further teaches the method, wherein passing data generated by a host process to a host

channel adapter includes using a Post Send verb to instruct the host channel adapter to

send data from system memory to a designated destination (paragraphs 0019, 0051-0058,

0071, 0082-0090, 0093, 0098 and 0115-0123; *Acharya:* col.1 line 59-col.2 line 11, col.4

lines 4-13 and col.5 lines 24-39).

o.   **Claims 15 and 23** are substantially equivalent to claim 7 and are therefore

rejected under the same basis.

p.   **Per claim 8,** *Acharya* and *Pettey* teach the method of claim 1, *Acharya*

further teaches the method, wherein the data is passed to the host channel adapter as one

of a Raw Datagram and an Unreliable Datagram (col.3 lines 19-26, col.5 lines 24-39,

col.5 line 64-col.6 line 4, col.6 lines 5-23 and col.7 lines 58-62).

q.   **Claims 16 and 24** are substantially equivalent to claim 8 and are therefore

rejected under the same basis.

r.   **Per claim 27,** *Acharya* and *Pettey* teach the method of claim 25, *Pettey*

further teaches the method, wherein if the data is an Unreliable Datagram and the

identified output port is not an InfiniBand output port, only an InfiniBand Transport

Header associated with the data is discarded (paragraphs 0026, 0127-0128, 0131-0132

and 0135-0138).

s.   **Claims 33 and 39** are substantially equivalent to claim 27 and are

therefore rejected under the same basis.

t.   **Per claim 28,** *Acharya* and *Pettey* teach the method of claim 25, *Pettey*

further teaches the method, wherein sending the data out of the router includes creating

an InfiniBand link layer header for the data (paragraphs 0104 and 0112; *Acharya:* col.6

lines 5-56).

u.   **Claims 34 and 40** are substantially equivalent to claim 28 and are

therefore rejected under the same basis.

v.   **Per claim 29,** *Pettey* teaches the method of claim 28, wherein the

InfiniBand link layer header identifies a host channel adapter receive queue (paragraphs

0102 and 0106-0107; *Acharya:* col.4 lines 4-13 and col.5 lines 9-24).

w.   **Claims 35 and 41** are substantially equivalent to claim 29 and are

therefore rejected under the same basis.

x.   **Per claim 30,** *Pettey* teaches the method of claim 28, wherein the

InfiniBand link layer header identifies an external network (paragraphs 0023, 0026, 0046,

0053, 0056, 0061, 0081, 0083, 0126 and 0139).

y.   **Claims 36 and 42** are substantially equivalent to claim 30 and are

therefore rejected under the same basis.

5.   Claims **26, 32 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable

over *Acharya* (USPN 6,459,698) in view of *Pettey* (US Publication 2004/0128398) and

further in view of *Karpoff* (US Publication 2001/0049740).

a.   **Per claim 26,** *Acharya* and *Pettey* teach the method of claim 25, as

applied above. *Acharya* teaches generating link layer fields, such as global routing

headers (col.6 lines 43-56), yet *Acharya* and *Pettey* fail to explicitly identifying an output

port of the router includes examining one of an InfiniBand Global Router Header's

Destination Global Identifier and an IPv6 Destination Address. However, *Karpoff* teaches

the identifying and addressing scheme provided by IPv6 incorporated with the use of

InfiniBand global routing which would implicitly include a header/identifier mechanism

(paragraph 0088).

It would have been obvious to one of ordinary skill in the art at the time

the invention was made to modify the teachings of *Acharya* and *Pettey* and combine the

teachings of *Acharya, Pettey* and *Karpoff* to include identifying a routing output port by

examination of the InfiniBand global ID and IPv6 destination address for the purpose of

tracking and maintenance of the routing activity with the use of an identifier and an

address, furthermore the use of IPv6 essentially provides increased available address

space, permitting the extended capabilities of the system.

b.   **Claims 32 and 38** contain limitations that are substantially equivalent to

claim 26 and are therefore rejected under the same basis.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure: *Pettey et al* (USPN 6,594,712), *Collins et al* (US Publication

2002/0144001), *Latif et al* (USPN 6,400,730), *Pekkala et al* (US Publications

2002/0085493 and 2002/0172195) and *Tzeng et al* (USPN 6,912,604).

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action.   Accordingly, **THIS ACTION IS MADE FINAL.**   See MPEP

§ 706.07(a).   Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than

SIX MONTHS from the date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kristie Shingles whose telephone number is 571-272-

3888. The examiner can normally be reached on Monday-Friday 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Kristie Shingles
Examiner
Art Unit 2141
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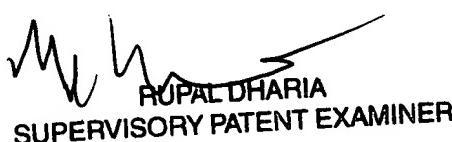
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